"AN OUNCE OF PREVENTION IS WORTH A POUND OF CURE."

PRACTICAL THOUGHTS

(MORE ESPECIALLY IN THE INTEREST OF AGRICULTURE)

ON THE

VERMIN, WORMS AND INSECTS

MOST DESTRUCTIVE TO VEGETATION, &c., &c.,

RATS, MICE, MOLES,

COTTON WORMS, POTATO BUGS

AND INSECT LIFE GENERALLY,

TOGETHER WITH ADVICE FOR THEIR

PREVENTION AND EXTERMINATION.

BY ROBT. T. CREAMER,

ANALYTICAL CHEMIST AND ENTOMOLOGIST,

(LATE OF LOUISIANA.)

DELIVERED BEFORE THE

FARMERS' CLUB, AMERICAN INSTITUTE,

AT

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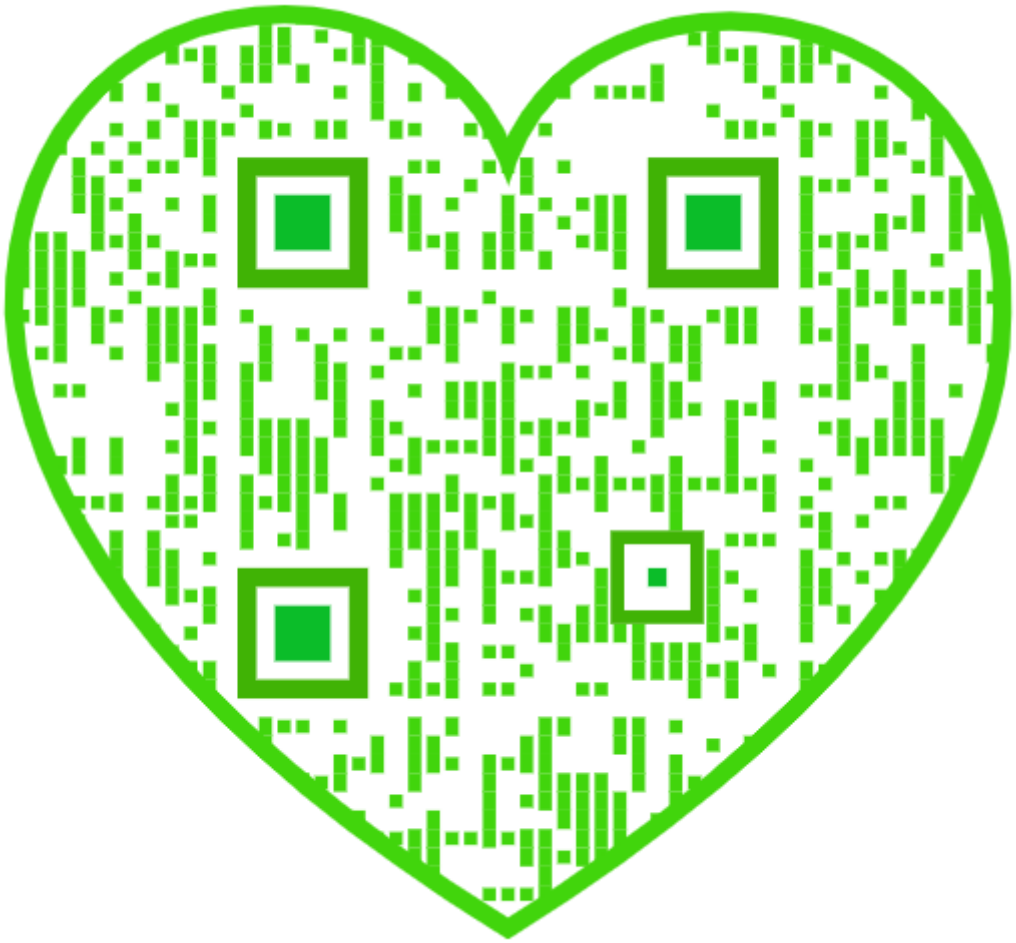

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PROFESSOR MITCHELL'S

POISONED WHEAT,

NATURE'S OWN REMEDY

For the Extermination of

THOSE DESTRUCTIVE AND LOATHSOME PESTS.

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☞ Remember that it is not claimed to kill off all your RATS, for that usually causes a great annoyance from steneh. Its great merit is predicated upon its certainty to drive the pests away from your premises.

(*It is well known that the cunning and instinct of Rats for self-preservation is marvellous, hence they will invariably abandon any locality where any inimical movement, which they are quick to detect, is being inaugurated against them.*)

☞ MICE, MOLES, &c., are almost instantly destroyed by it, dying on the very spot where the Wheat is placed; hence the Mice can be easily thrown where the stench is not offensive.

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Prepared under the superintendence of DR. R. T. CREAMER, ANALYTICAL CHEMIST AND ENTOMOLOGIST, No. 956 EIGHTH AVENUE, NEW YORK, to whom all applications for Sample Package must be made.

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PREFACE.

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THIS pamphlet is published at the solicitation of numerous planters and farmers with whom I have corresponded for a series of years on the subject-matter to which it relates.

My thirteen years' residence in the South, during which time I gave much attention and research to these matters, has given me unusual facilities for practical knowledge, especially in regard to those two greatest of all destructive pests to agriculture, viz. :

The Cotton Worm and Potato Bug (or Beetle).

While pursuing that branch, however, I have not been unmindful of many other noxious and loathsome pests both to

FIELD AND FIRESIDE,

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and have endeavored, under the heading of the more destructive kinds of VERMIN, to give such information as will prove of incalculable value to the public generally.

I launch this Book amidst a sea of "PATENT NOSTRUMS" (*which I believe have all more or less failed in their mission*), in the hope to secure for the remedies I propose a fair share of public favor, and thus CONVINCE all who need assistance in such matters that entire freedom and immunity can be secured against all forms of VERMIN AND INSECT LIFE.

Very truly, &c.,

ROBT. T. CREAMER,
CHEMIST AND ENTOMOLOGIST,
No. 956 Eighth Avenue, New York.

MESSRS. DAVID M. STIGER & CO.,
Wholesale Druggists and Manufacturing Chemists,
No. 58 BARCLAY STREET, NEW YORK,
WHOLESALE AGENTS.

FIRST PART.

Rats, Mice, Moles, Crows,

&c., &c., &c.

A Paper on Destructive VERMIN, BUGS, WORMS AND INSECTS, read by Dr. Robt. T. Creamer (late of Louisiana) before THE FARMERS' CLUB, AMERICAN INSTITUTE, at COOPER INSTITUTE, NEW YORK, June 21st, 1879.

Mr. President and Members of the Club:

At occasional intervals during the present century, and frequently during the last decade, strenuous efforts have been made by all the COMMISSIONERS OF AGRICULTURE for the several States, AGRICULTURAL SOCIETIES generally, and many others, to attract more general public attention to the continual enormous increase of destructive VERMIN, WORMS AND INSECTS, and the consequent very serious loss, especially of cereal products, caused thereby, with the view that the attention of chemists and naturalists might be more immediately directed to devise some CHEAP AND PRACTICABLE REMEDY which would tend to at least mitigate the serious damage and great annoyance which nearly every AGRICULTURIST AND HOUSEKEEPER, and, in fact, all classes of our people, almost daily and

nightly experience from the inroads of some of the varied forms of

VERMIN AND INSECT LIFE.

(*The United States Entomological Commission, of which Prof. C. N. Riley, Entomologist of the Department of Agriculture at Washington, is chief, are now, by authority of law and under a large appropriation made by Congress, traveling through the Cotton States, with a view to especially investigate the cotton worm. They have already promulgated, through Prof. Riley, Chairman of the Commission, that the annual loss from that caterpillar alone is upwards of* $20,000,000.)

Urgent demands have gone up from every branch of our industrial pursuits, from the rich as well as the poor, for some remedy which would check the enormous pecuniary loss from that source alone, which at the present time (including that of cereal products lost to growth by crows, grasshoppers, &c.) can be safely estimated as aggregating in the United States alone to fully

$100,000,000 DOLLARS ANNUALLY;

but still the evil goes on gathering strength and volume, and attracting but little of general public attention, and mostly then in the interest of some specific which was guaranteed at one fell swoop to destroy all the rats, mice, &c., in our dwellings, barns, ships, &c.; another all the cotton worms and potato bugs in our fields; another, all insects generally in our kitchens and household; and the result shows conclusively that there are at this present time more rats, mice, &c., and in their season, more cotton worms, potato bugs and insects than ever before.

THE REMEDIES HAVE ALL MORE OR LESS FAILED, SIMPLY BECAUSE THEY WERE PREDICATED UPON CAUSING INSTANT DEATH TO THE LONG LIST OF NOXIOUS PESTS, RATHER THAN ON THE

MEANS OF THEIR PREVENTION AND RIDDANCE AS WELL AS THEIR DESTRUCTION.

Any remedy, to be of noticeable value, at least so far as the extermination of rats is concerned, must also cover this ground, or it will be a failure, for there are myriads of those vermin, and it is simply an impossibility to destroy enough of them to accomplish any marked favorable result.

IT IS INFINITELY PREFERABLE TO SECURE RIDDANCE OF RATS, RATHER THAN TO POISON A FEW AND THUS CREATE A HORRIBLE STENCH. "THE REMEDY IN SUCH CASES IS WORSE THAN THE DISEASE," AND BESIDES, THE KILLING OF EVEN A SCORE OR MORE SECURES NO FREEDOM FROM THE PESTS. THERE ARE PLENTY LEFT.

RATS.

As I propose to treat seriatim of the pests which are the source of our greatest damage and annoyance, I must speak of the RAT first. Of all the lower order of destructive animals they head the list, for they are ravagers at almost every FARM AND FIRESIDE everywhere. They more or less invade every building, and not a single vessel which traverses ocean, river, or canal is entirely free from them.

Time will fail me to go into any elaborate description of his natural history, their origin, character and habits, wondrous instinct and cunning, especially for self-preservation, the remarkable fecundity of the female, &c., &c.; the main points are well known to you, and to the public generally, and so I will come at once to the more important question, *What can be done to check the enormous increase of the species and the serious damage which he causes?*

IT IS ESTIMATED THAT THERE ARE IN THE CITY OF NEW YORK ALONE, NOT LESS THAN 100,000,000 RATS. IF THIS BE SO, AND I HAVE NO REASON TO DOUBT IT, IT MAY WELL BE STARTLING.

For a number of years my attention has been especially directed to a study of the habits and character of the Rat, with a view to devise a means which would tend to secure better protection and immunity from their ravages than anything hitherto devised.

If, as has been fairly estimated, there are billions of rats, it is idle to indulge the hope that they can be decimated to any great extent by any specific which bases its claims for public favor upon its killing capacity. A box of "PHOSPHORUS PASTE," which is the RAT EXTERMINATOR in general use, will produce no riddance or relief from the pests. Even if it has killed a few, the annoyance still remains, only to be intensified in a great degree, arising from the horrid stench which their dead carcasses create. A trap affords but little relief, for it is rarely of any use except at its first setting.

Any remedy to be worthy of public favor must take broader ground, for that above named has clearly proved inadequate.

IT MUST ACCOMPLISH SUCH RESULTS AS TO MAKE THE RAT SHUN THE PLACE WHERE THE SPECIFIC IS USED. TO DRIVE HIM AWAY FROM THE PREMISES, AND ALSO POSSESS SUCH QUALITIES AS WILL TEND TO IMPAIR THE GREAT POWERS OF FECUNDITY IN THE FEMALE.

(*Five or six times a year, and frequently a baker's dozen at a litter.*)

The result of a series of experiments for a number of years, and the very large number of proofs

that I now have in support of the theory, has convinced me that WHEAT, the natural food of the Rat, can be so prepared as to be the best specific that has yet been devised. It is the natural wheat in the whole grain chemically prepared so as to be powerfully obnoxious to the rodent tribe after they have partaken a few grains of it, which they are sure to do, and will lead to their general abandonment to other quarters, and there, weak and puny, their vital powers impaired, they soon fall a prey to death, if not sooner killed by the stronger of their species, which is very apt to be the case.

(*It is a well-known fact that an ailing rat is quickly killed by its comrades. Like the buffalo, they suffer no sick one to follow the herd.*)

To such general approval has this CHEMICALLY PREPARED WHEAT attained, that I have been induced to put it on the market for general sale under the name of

PROFESSOR MITCHELL'S POISONED WHEAT.

I CLAIM AND ASSERT FOR IT, NOT THAT IT WILL INVARIABLY DESTROY ALL RATS WHO PARTAKE OF ANY PORTION OF IT, BUT THAT, BASED UPON THEIR MARVELLOUS INSTINCT FOR SELF-PRESERVATION, IT WILL SECURE TO THE LOCALITY WHERE IT IS USED THEIR ENTIRE ABANDONMENT.

The result of numerous experiments with it has convinced me and others that Rats will leave any place where any inimical movement (*which they are quick to detect*) is being inaugurated against them. Some of them will greedily eat only a few grains of it, and finding that it has been tampered with, and the result, sickness, etc., that information will be quickly imparted to the others, and will inevitably lead to a general migration to other quarters.

You, who are mostly practical farmers, well know that a string stretched around a corn field with a few pieces of bright tin attached, is about as good a SCARE-CROW as can be devised. If you will admit that crows regard that as a trap to ensnare them, and hence will avoid the field, with how much more probability must it be conceded that the same general idea can be carried out with Rats, for their cunning is infinitely greater than that of crows. (*"It passes all understanding."*)

POISONED WHEAT is predicated upon the same general idea, and my firm belief is that RATS, after they have eaten a few grains of it, regard it as a snare to destroy them, and will, as soon as a few or even one of their number, have partaken of it, WILL FORSAKE THE PREMISES WHERE IT HAS BEEN SPRINKLED AND TAKE ALL THE OTHERS WITH THEM.

I also claim and assert for POISONED WHEAT, that it possesses such properties as to seriously impair the enormous procreative functions of the female rat, and that its general use will tend to materially aid in their ultimate decimation, and that if it were in universal use it would eventually accomplish such a decrease of the species as to prevent any great pecuniary loss or damage from those that remain. The great damage that now occurs from their ravages is owing to their excessively immense numbers, and the consequent difficulty of procuring food for all, and large as it is, it is estimated by those who have given the subject attention and research, that if it were not for the feline race, they would double their numbers every decade. I am of the opinion that if it were not for that wise provision of nature to prevent an undue increase of the species, we should be literally overrun with them, and we could hardly keep our cereal products long

enough to reach the mill. *Now that it has become quite the custom to destroy the greater part of poor Grimalkin's litter, it stands us all in hand to devise something which will counterbalance that violation of nature's law.*

In this connection it is well also to know that since through the benign efforts of that prince of philanthropists, MR. HENRY BERGH, President of the Society for the Prevention of Cruelty to Animals, RAT-BAITING has been stopped, which heretofore created a large demand for live rats, and has hence checked the incentive to catch them for sale, and thus also prevent the practice which Mr. Terrier needs to become skillful in his profession, that also has added not a little to the apparent increase of rats in this city, and that it would be a wise and beneficial provision if he would now issue from his facile pen an urgent appeal to our citizens to stop the general wholesale destruction of the cats' litters, which now so generally prevails, and thereby aid in allowing the feline race to fulfill their rightful mission, which is a relentless and unceasing war upon those destructive and loathsome pests.

If it shall seem to some of you (*as doubtless it may*), that it is hardly possible that Wheat can be so prepared as to seriously impair the procreative capacity of Rats, I beg to remind you that Ergot of Rye, which is simply a fungus of rye, is well known to the medical faculty for its efficiency in a similar direction. Poisoned Wheat is somewhat analogous to spurred rye, as it is commonly called, and will act upon the rodent race in a similar manner.

(*Mr. Charles Cressler, a distinguished chemist and scientist, reported to the American Journal of Commerce, in July,* 1861, *that a fungus of Indian Corn, which he called Ergot of Maize, had been known to produce abortion in a Cow, and that a small quantity of it had produced a like effect on two pregnant bitches.*)

MICE.

Unlike the rat, mice have not the slightest instinct for self preservation, and are quickly and easily destroyed by the most minute poison.

The ordinary HOUSE MICE, which are continually nibbling at everything eatable about our dwellings, and also making havoc with Books, Papers, Clothing, Bedding, Gloves, &c., &c., render them a source of great annoyance.

They are almost instantly killed by POISONED WHEAT, and find death on the very spot where the Wheat is placed, hence they can be easily thrown where the stench will not be offensive.

FIELD MICE often abound in our grain fields in great numbers, in some seasons, in some localities, and do much mischief in the Spring and Fall after the seed is sown. (*Some few years ago they proved a terrible pest to farmers throughout Continental Europe, so much so as to very materially enhance the price of Strychnia, which was universally used in large quantities for their extermination.*) They can be easily destroyed in the same manner as the HOUSE MICE.

GROUND MICE are very destructive to tender roots and plants, and often do great damage in hot-houses during the Winter; they seldom touch anything on the surface of the ground, so the Poisoned Wheat, to insure their destruction, must be placed in the ground as hereafter described under the heading of Moles.

MOLES.

It is a mooted question as to whether Moles are useful or not. They certainly are useful in their search for grubs and earth worms, which they con-

sume in large numbers, but in doing this, they are very apt to go right through a hill of corn, or the roots of any vegetable. In their "runs," come the ground mice which eat the vegetation, thus adding to the mischief. IF THEY ARE NUMEROUS, THEY CERTAINLY DO GREAT DAMAGE IN LAWNS AND GARDENS.

I positively know that they will eat grain, notwithstanding it is claimed by some naturalists to the contrary. I have killed thousands of them with the Poisoned Wheat. To do this, pierce the ground with a smooth stick, until the end of the stick reaches the hole through which the mole runs, then withdraw it gently to prevent the dirt from filling up the hole again, and through this drop a few grains of the wheat; repeat this operation in several places of the track, or wherever new tracks appear.

(*See Extract from New York Independent, June* 26, 1879, *on the subject of Moles, on page* 14.)

CROWS, PIGEONS, SQUIRRELS.

Hardly any one but the practical farmer can fully realize the very serious loss and annoyance occasioned by Crows, especially in some localities where they greatly abound. The Commissioners of Agriculture for several of the Western States always allude to this subject in their annual reports, and have placed the amount of Corn, Wheat, &c., lost to growth by their maraudings, as approximating into many millions of bushels. Like the rat, Crows also are wondrously cunning, and seem to know they are trespassing on forbidden ground, when they are watching a chance to alight on the recently planted corn field.

(I knew a farmer who once placed an old open cotton umbrella in the center of his prospective corn field, believing it would prove an inimitable scare-crow. Soon after a violent shower came up, and large numbers of the crows huddled under it until the rain was over.)

PIGEONS.—Do more damage than many intelligent farmers are aware of; especially, in their injury to ROOFS. In this respect they are a nuisance. I wish I could persuade farmers to get rid of them.

SQUIRRELS.—In some of the Far Western States and Territories, and especially in California, squirrels are very destructive to agriculture, and means are extensively used for their extermination.

FOR CROWS, PIGEONS AND SQUIRRELS—Nothing has ever been devised that presents so easy and perfect a method for getting rid of them as Professor Mitchell's Poisoned Wheat.

☞ Simply sprinkle a small quantity of it on a flat stone or old board in various parts of the field, or where the pests "most do congregate," and the work is accomplished, and your crop is safe. *All you have to do is to be careful to keep it out of the reach of your chickens. Dogs and cats will not touch it.*

SPARROWS—Also, are quickly destroyed by the Wheat, and I recommend its use in case you desire to get rid of a surplus supply.

It was my intention in this paper to treat also at some length upon the

COTTON WORM, POTATO BUG AND OTHER INSECTS,

but as I have detained you too long already, I shal have to defer that part of my subject until the next meeting. I shall then dwell especially upon the

COTTON WORM AND POTATO BUG.

And speak also of a remedy,

PROFESSOR MITCHELL'S COLEOTHANATINE,

which can be used like Paris Green, either dry or in a liquid state, the cost of which is insignificant, a remedy which I POSITIVELY KNOW is equal, if not superior, in its destructive effects, to Paris Green and which possesses that great desideratum,

NOT SO POISONOUS TO HUMAN LIFE.

I thank you for the kind attention you have given to my humble endeavors to discuss this very important subject, and trust it may serve to induce others to "come to the front" for a general awakening in this matter, which is largely in the interest of that basis of all our national wealth and welfare, Agriculture! Agriculture! Agriculture!

[*From the New York Atlas, July 1st*, 1879.]

SOMETHING WORTH TRYING.

At a recent meeting of the Farmers' Club, Dr. Heath introduced a gentleman whose remarks were listened to with great interest, and greeted with frequent rounds of applause. This gentleman was Mr. R. T. Creamer, of 956 Eighth avenue, New York, and his paper on "Rats, Mice and other Pests," was certainly an able production, and one containing many facts of value to farmers and housekeepers. It is unquestionable that the amount of property annually destroyed by the different kinds of pests, including crows, potato bugs, &c., is represented by many millions of dollars, and any remedy for this wholesale destruction is well worth a trial. Mr. Creamer's remedy for rats, mice, crows, moles, &c., is his "Poisoned Wheat," a preparation which, if sprinkled where the vermin congregate, will either kill or frighten them away from the premises. With rats it has been found extremely efficacious, as their strong instinct for self-preservation leads them to abandon any place where they have found it mixed with their daily food.

Mr. Creamer certainly claims great things for his exterminator, and he expresses himself willing and anxious to substantiate everything he says. D. M. Stiger & Co., of 58 Barclay street, are his principal agents.—*Ed.*

[*From the New York Independent, June* 26, 1879.]

ARE MOLES USEFUL?

* * * * * * * *

Whatever may be said in favor of moles on general principles, we know by experience that they are a great nuisance, as well as damage, in either the lawn or garden. After being troubled and maddened with them for several years, we have lately found an effectual means of destroying them by using poisoned wheat, which is put up by Prof Mitchell, and may be purchased at any drug store. The moles eat the wheat readily and it is sure death to them. The way we have used the article has been to take a piece of stick about the size of one's little finger, made square on the end, and punch through the surface of the ground until the end of the stick reaches the hole through which the mole runs. Carefully withdrawing the stick, to prevent the dirt filling up the hole again, several kernels of the wheat are dropped into the hole. The operation is repeated in several places of the same track, and whenever new tracks are seen the dose is applied in the same manner.—*Ed.*

A FEW TESTIMONIALS AMONG THE MANY.

OFFICE OF CHIEF OF POLICE,
NEW ORLEANS, LA., Aug. 16, 1878.

Messrs. R. T. CREAMER & Co.:

Gentlemen—I used several packages of your MITCHELL'S POISONED WHEAT, not only at my residence, but also at some of our metropolitan precincts. We did not find any dead rats, but it seemingly proved a complete success in ridding us of rats, for we saw none for a long time after using it. Before that, they congregated in my back yard in scores, and I have seen dozens of them, even in the day time, from my back parlor windows. They caused us much damage, &c., so many thanks to you for their riddance.

Very respectfully, &c.,
W. F. LOAN, Chief of Police.

OFFICE OF THE NEW YORK ROOFING CO.,
No. 437 East 23d St.,
NEW YORK, Jan. 6, 1879.

Messrs. R. T. CREAMER & Co.:

Gentlemen—I am not able to make a very favorable report of the number of dead rats found on our premises after the use of MITCHELL'S POISONED WHEAT. This much I will say to you, that before we commenced using it we were literally overrun with rats at our various roofing depots, which caused us serious damage and annoyance, but we are now quite entirely cleared of them. I can only attribute their departure to the use of MITCHELL'S POISONED WHEAT, which, to my mind, possesses better properties for driving them away than it does for destroying them; perhaps it makes them sick, or something of that sort, and so they seek out other quarters for their maraudings. If so, so much the better. Very truly, &c.,

JOHN C. MOSES, Vice-President.

OFFICE OF MOORE & WARREN,
No. 57 John St.,
NEW YORK, Jan. 17, 1879.

Mr. R. T. CREAMER, New York:

We have used MITCHELL'S POISONED WHEAT, and find it does all you assert. We did not find any dead rats, but we are certain of one thing—*they have left our premises!*

Very respectfully,
MOORE & WARREN.

CLIPPER SHIP THREE BROTHERS,
Pier No. 19 East River,
NEW YORK, April 30, 1879.

Mr. R. T. CREAMER:

Send me three dozen more packages of MITCHELL'S POISONED WHEAT. It has accomplished wonders in ridding this ship of Rats, and I want to keep a stock on hand as part of our regular supplies in case the pests invade us again. It is the best thing I have ever tried. GEORGE CUMMING, Capt.

CHARGE OF THE RAT BRIGADE.

Half a rod—half a rod—half a rod onward,
Right through the holes they made
Stole the six hundred.
Too shrewd for trap or cat,
Boldly they came and sat,
Eating "THE WHEAT" Rat
Ex—term—inator!

Now for fresh air they run,
And as they writhe and burn
Each asks his mate in turn,
Is this the E—qua—tor?
Then falling sick and flat,
Men cry, approving, "THAT
Was PROFESSOR MITCHELL'S Rat
Ex—term—inator"!

When will its triumphs wane?
Not while rats, mice, and moles remain,
Not while it proves their bane
Ex—term—ination.
Sound, then, its praise so high,
Nations abroad may cry,
We, too, entreat to buy and try
"PROFESSOR MITCHELL'S Wheat
Ex—term—inator"!

SECOND PART.

Cotton Worm, Potato Bug

AND

INSECT LIFE GENERALLY.

A Paper on Destructive Vermin, Bugs, Worms and Insects, read by Dr. Robt. T. Creamer (late of Louisiana), before the Farmers' Club, American Institute, at Cooper Institute, New York, July 1st, 1879.

Mr. President and Members of the Club:

You, who were present at the last meeting of the Club, will at once recognize this paper as being a continuation of the same subject upon which I had the honor to speak at that time. The fear of making my paper too long then impelled me after speaking at some length upon RATS, MICE, MOLES, CROWS, ETC., to defer that part of the subject which related more especially to "INSECT LIFE" until another time.

I am here to-day to resume that part of the subject, and have called it the second part.

You will remember that the burden of my theme then was more especially upon the enormous loss caused to the agriculturist by the vermin of which I then spoke, and it will be the same in this as applied to the

COTTON WORM AND POTATO BUG (OR BEETLE).

It is a source of general congratulation that the attention of Naturalists and Entomologists is now being actively called, not only under the patronage of the National Government, but also of several of our State Governments, to the continual enormous depredations of the destructive pests just named, as applied to our agricultural products.

(*The United States Entomological Commission, of which Prof. C N. Riley, Entomologist of the Department of Agriculture at Washington, is chief, are now, by authority of law and under a large appropriation made by Congress, traveling through the Cotton States, with a view to especially investigate the Cotton Worm. They have already promulgated through Professor Riley, Chairman of the Commission, that the annual loss from that caterpillar alone is upwards of* $20,000,000.)

The investigation of this subject is a necessity of the case and must in the end be productive of beneficial results, especially under the direction of Professor Riley, who stands at the head of his profession, but it is greatly to be regretted that the commission was not inaugurated some years ago, before the evil became so evidently largely on the increase.

In this connection, I trust I may be pardoned for saying that I am of the opinion that many of our professional entomologists have signally failed in providing a remedy which would check the evil, and that they have seemingly been too much occupied with elaborate scientific dissertations upon the subject, which, while it is very useful and instructive to the student of natural history and to the science of entomology, possesses but little of interest or profit to the practical agriculturist.

I regret that want of time precludes my going into as lengthy a treatise of the subject of INSECT

LIFE as the importance of the case demands. There are fully 5,000, perhaps more, varieties of vermin, bugs, worms, insects and parasites, each of which, in their sphere, are more or less destructive to vegetation, and it is evident at a glance that the subject is so vast that any strictly scientific discussion of it is impracticable at this time, and even if it were, it is not, I take it, what is most desired before the FARMERS' CLUB. I shall, therefore, endeavor to confine myself to a plain, practical talk about those two greatest of all destructive pests to vegetable life, which have in some instances destroyed an entire crop and rendered not a few planters and farmers farmless, viz.:

The Cotton Worm and Potato Bug (or Beetle), and shall afterwards briefly touch upon such destructive bugs and insects as are our greatest household annoyance.

Professor Riley, in connection with the work which the U. S. Entomological Commission is now making on the subject of the Cotton Worm, has foreshadowed some of the results of their labors, by promulgating the announcement "that it has been discovered that the Cotton Worm Moth hibernates and lays its eggs much earlier than was heretofore supposed, and that this fact alone will be of great value to the cotton planter, as they can now be on the lookout for the worms at least six weeks earlier than before." This is surely a point gained, but it evidences that but little was practically known upon the subject heretofore. He has also added that the average annual loss from that worm alone is $20,000,000. The loss through the POTATO BUG will doubtless aggregate to quite as much, and even more, for not alone does that bug often entirely

blight the potato field, but is equally as destructive to such tender vines as MELON, SQUASH, CUCUMBER, ETC., ETC.

THE POTATO BUG.

It is a remarkable fact that this bug, or beetle, which is its more rightful cognomen, is quite a newcomer among us, and is a FAR WESTERN PRODUCT.

It first became known as a destroyer, west of the Mississippi, only about twenty years ago, and for several years was only known to the States and Territories lying west of that river. In 1865 it crossed the Mississippi, did great harm in 1866 and '67, in Missouri and other States lying on the border of the river, and has since steadily pressed its way to the Atlantic States and is now feared and dreaded in almost every State of our Union.

How comparatively easy a few years back to have destroyed this race of beetles, but how difficult now. It is not too late to successfully inaugurate and continue the process of extermination and the prevention of serious damage by them, at least so far as our agricultural products are concerned.

As I have said before, it is not my intention to treat of this bug, and also of the cotton worm, by the use of any scientific nomenclature; in fact, I shall ignore it entirely, for that to the practical agriculturist is but little cared for; he has quite enough of that already, perhaps too much, so I will confine myself to a plain, unvarnished talk, which shall be intelligible, even to the uneducated farmer, if such there be, and above all, TO THE MEANS TO BEST INSURE THEIR FINAL EXTERMINATION.

THE POTATO BUG hibernates, or goes into Winter quarters, beneath the surface of the ground, to various

depths, according to the latitude, in out of the way places, under decaying vegetable matter, rubbish, rotten wood, &c., and issue from them as perfected beetles, during the first warm days of Spring. The females, which in comparison with the males, are almost wingless, deposit their eggs in large numbers, a thousand or so, upon the young potato plants, or on any tender vines, on the underside of the leaves. In about ten or twelve days these eggs become larvæ or grubs, after which they enter the ground, first turn to pupa and then to beetle, which last state is assumed in about one month from the time of hatching. There are usually three broods in the course of the Summer, and they may be found in any of those months in different stages. The number produced by each female averages nearly a thousand. The whole cycle of transformation requires only a month and the last batch of beetles issue from the ground in early Fall, and these are probably the progenitors of the species, and as we have just stated enter it again to pass the Winter. It is apparent from this, that if the first brood of Spring can be checked, they cannot multiply into such immense numbers. The early Spring is therefore the best time to be on the watch for them to destroy them.

Of the remedy to be used to destroy them, I shall speak at length after I have spoken of the cotton worm, for it is the same in both cases.

THE COTTON WORM.

Unlike the potato bug, the history of the Cotton Worm is ancient. We have accounts of it long before the war of the Revolution, and as early as the year 1793 it is reported to have destroyed the entire

crop of Georgia. Early in the present century its great injuries were officially reported by several State authorities to the Patent Office at Washington, long before the Bureau of Agriculture was established, and the multiplicity of such cases doubtless primarily led to the establishment of that Bureau. It has ever since continued to do more or less damage to almost every cotton crop planted.

The Cotton Worm proceeds from its parent moth, the female of which deposits its eggs in large numbers, from six to eight hundred, on the underside of the leaves of the plant, and are so small in size as to be difficult of detection. According to some authorities they hatch within three days. The worms at first feed upon the tender part of the plant, but in a few days more will devour any part. When the worms have completed their growth, which is in about four weeks, they fold over the edge of a leaf which they line with a silken fibre, and soon change to chrysalids; after remaining in this state for from 14 to 20 days, according to the weather, the moth emerges, in which state they are harmless to vegetation except through their egg producing capacity, and from thence out their existence is very short. The female probably dies as soon as the eggs are laid. As in the potato bug, it is the last brood that causes the damage in the following season, for it is the chrysalids of the late Fall that only remain in a torpid state during the Winter and emerge in early Spring.

The Cotton Caterpillar feeds twice a day and only for about four weeks. They seldom commence before 9 o'clock in the morning and then eat continuously until noon, when they retire back to their nests, often guided back thereto by an almost im-

perceptible strand of web, which they extend as far as they go. In the afternoon they again resume their ravages until sundown, when they again retire to their nests as before. My knowledge of this is practical, and not theoretical, or from books. I have in several instances, in the County of Yazoo in the State of Mississippi, and in the parishes of Rapides, Pointe-Coupee and others in the State of Louisiana, been fairly awakened at a late morning hour by the united munching of myriads of those horrible pests in a contiguous cotton field where all was serene and quiet only the day before, and I have been a helpless looker-on and seen in less than three days every thing green eaten up, and all hopes of any crop utterly blasted.

But now for the remedy. Had those planters of whom I have just spoken taken the proper precaution to have gone through their fields the Fall before, and carefully picked and burned the numerous turned down leaves which they would have found containing the chrysalids, a very large share of the crop might have been saved; but this being neglected, and no available remedies at hand, or in time to be procured, the work of devastation was fully established.

First of all I recommend that treatment, but even then it is often requisite to bring into requisition some artificial remedies; of these Paris green is more extensively used than any other, and there is no denying the fact that it is an effective agent for their destruction. If it were not for its terribly poisonous properties to human life, I would not be here to-day in the advocacy of any other remedy, but I am constrained to the belief, FROM THE NUMEROUS DEATHS THAT HAVE OCCURRED FROM ITS USE,

FROM THE HUNDREDS OF CASES OF SICKNESS THAT IT HAS OCCASIONED, FROM THE MANY ULCEROUS AND MALIGNANT SORES THAT IT HAS CAUSED, THAT SOME OTHER REMEDY MUST SUPERSEDE IT.

(ONLY ONE INSTANCE AMONG HUNDREDS.

From the New York Times, July 13, 1879.

POISONED IN A STRANGE WAY.

A correspondent of the Newburg Journal, writing from Highland Falls, says that Charles Smith, on the other side of the river, while shaking from a duster dry Paris Green on his potatoes a few days ago, inhaled some of the poison, and died on Wednesday last in great agony. He was aged 32, was the son of Samuel Smith, and leaves a large family. It is said the wind was blowing hard at the time, and this caused the poison to fly about so that Mr. Smith inhaled it.)

In this interest, I have experimented for a series of years with a view to provide a remedy that was NOT SO DEADLY POISONOUS. I have at last succeeded, with the assistance of other chemists, in perfecting a safe, sure and easily used DESTRUCTIVE AGENT to all forms of INSECT LIFE, one which is NOT SO POISONOUS TO THE HUMAN FAMILY.

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is a substitute for PARIS GREEN in the extermination of the COTTON WORM and POTATO BUG, and will positively CONVINCE all who try it that all forms of household insects, such as COCKROACHES, CROTON BUGS, BED BUGS, MOTHS, ANTS, ETC., can be quickly and easily exterminated by its use.

It can be used either dry or made liquid by the addition of water, and in the opinion of all who have used it stands

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All other caterpillars, those that infest grape vines and all other tender leaves and plants, lice on rose bushes, &c., &c., can be at once exterminated with Coleothanatine.

Time fails me to go into any description of cockroaches, bed bugs, moths, ants, &c., &c., as I at first intended, (I have written it, but am obliged to pass over it). I claim and assert that all those loathsome pests are almost instantly destroyed by PROFESSOR MITCHELL'S COLEOTHANATINE.

I cordially invite correspondence upon the subject of VERMIN AND INSECT LIFE, addressed to me at my residence, No. 956 EIGHTH AVENUE, NEW YORK, assuring all who write me that I will cheerfully hold myself in readiness to impart a fair share of the practical knowledge I have gained, especially in regard to the Cotton Worm, during my thirteen years residence in the States of Louisiana and Mississippi.

Again thanking you, as before, for the kind attention you have accorded me, I beg to assure the Farmers' Club, and all other agriculturists, that I will do all I can to aid in assisting the golden chariot of agriculture to ride triumphantly onward until the last impediment to perfected fruition is fully overthrown, and a reasonable assurance of a full crop shall inure, the elements excepted, to him who plants and labors to that end.

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